

### **Abstract of the Disclosure**

The specification describes an MCM package which contains both a digital MCM and an RF MCM in a stacked configuration. The package contains means for isolating RF signals from digital signals. In one case the digital MCM substrate is attached to the system substrate and the RF MCM substrate is attached to the digital MCM substrate. Solder bumps are used for attachment in an arrangement resembling a BGA. For high density packages, at least the digital MCM comprises stacked IC chips. In the embodiment with the RF MCM substrate on the top of the stack, Passive Through Interconnections (PTIs) are made through the digital MCM substrate, and electrically isolated therefrom. The passive through interconnections are made through the solder bumps between boards and interconnected using a passive (with respect to the digital MCM board) through hole. Both the RF ground and the RF input can be isolated using PTIs. For additional isolation, the solder bumps comprising the PTIs are shielded with a Faraday cage. The Faraday cage comprises an array of solder bumps surrounding the solder bump RF conductors.